



**DULUTH ENERGY**  
SYSTEMS

# Proposed 2017 Budget & Rates

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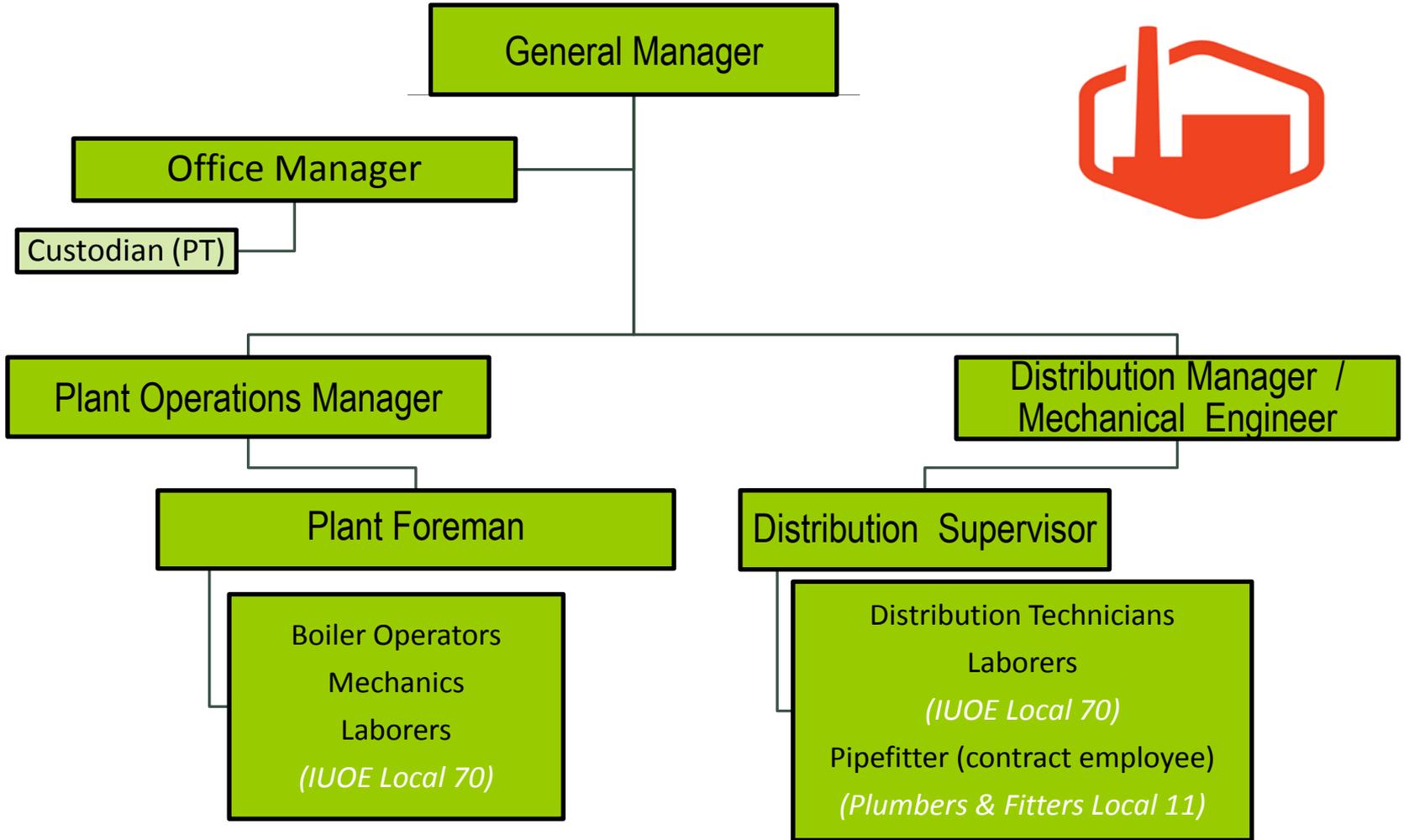


**EVER-GREEN**  
**ENERGY™**



# Duluth Energy Systems Organization

(on-site employees)



# Staffing 2016 & 2017

FTE

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| <b>FTE</b>              | <b>2016<br/>(Budgeted)</b> | <b>2016<br/>(Forecast)</b> | <b>2017<br/>(Budgeted)</b> |
|-------------------------|----------------------------|----------------------------|----------------------------|
| Office &<br>Supervisory | 4                          | 3.75                       | 5                          |
| Bargaining<br>Unit      | 18                         | 17.5                       | 17                         |

# Revenue

| <i>\$ in thousands</i>             | <i>2017 Budget</i> | <i>2016 Forecast</i> | <i>2016 Budget</i> |
|------------------------------------|--------------------|----------------------|--------------------|
| <b>Energy Revenue</b>              |                    |                      |                    |
| Steam                              | \$ 6,837           | \$ 6,575             | \$ 6,584           |
| Hot Water                          | \$ 399             | \$ 377               | \$ 393             |
| Chilled Water                      | \$ 319             | \$ 319               | \$ 319             |
| <b>Subtotal Energy Revenue</b>     | <b>\$ 7,555</b>    | <b>\$ 7,271</b>      | <b>\$ 7,296</b>    |
| <b>Non-Energy Revenue</b>          |                    |                      |                    |
| Customer Finance Charges           | \$ 23              | \$ 33                | \$ 18              |
| Grants                             | \$ -               | \$ -                 | \$ -               |
| Miscellaneous                      | \$ 21              | \$ 14                | \$ 13              |
| <b>Subtotal Non-Energy Revenue</b> | <b>\$ 44</b>       | <b>\$ 47</b>         | <b>\$ 31</b>       |
| <b>Total Revenue</b>               | <b>\$ 7,599</b>    | <b>\$ 7,318</b>      | <b>\$ 7,327</b>    |

# Expenses

| <i>\$ in thousands</i>                 | <i>2017 Budget</i> | <i>2016 Forecast</i> | <i>2016 Budget</i> |
|--|--------------------|----------------------|--------------------|
| <b>Energy Operating Expenses</b>       |                    |                      |                    |
| Steam                                  | \$ 2,949           | \$ 2,932             | \$ 2,948           |
| Hot Water                              | \$ 94              | \$ 73                | \$ 85              |
| Chilled Water                          | \$ 121             | \$ 130               | \$ 121             |
| <b>Subtotal - Energy Op Expenses</b>   | <b>\$ 3,164</b>    | <b>\$ 3,135</b>      | <b>\$ 3,154</b>    |
| <b>Non-Energy Operating Expenses</b>   |                    |                      |                    |
| Maintenance                            | \$ 571             | \$ 641               | \$ 422             |
| Labor                                  | \$ 2,278           | \$ 2,224             | \$ 2,154           |
| General & Administrative               | \$ 363             | \$ 381               | \$ 325             |
| Management Fee                         | \$ 255             | \$ 247               | \$ 247             |
| <b>Subtotal Non-Energy Op Expenses</b> | <b>\$ 3,466</b>    | <b>\$ 3,493</b>      | <b>\$ 3,148</b>    |
| <b>Operating Expenses - Total</b>      | <b>\$ 6,630</b>    | <b>\$ 6,628</b>      | <b>\$ 6,302</b>    |
| <b>Other Expenses</b>                  |                    |                      |                    |
| Bond Interest & Fees                   | \$ 208             | \$ 220               | \$ 226             |
| City Fees                              | \$ 153             | \$ 135               | \$ 153             |
| Depreciation                           | \$ 1,305           | \$ 1,191             | \$ 1,096           |
| <b>Subtotal - Other Expenses</b>       | <b>\$ 1,666</b>    | <b>\$ 1,546</b>      | <b>\$ 1,475</b>    |
| <b>Total Expenses</b>                  | <b>\$ 6,630</b>    | <b>\$ 6,628</b>      | <b>\$ 6,302</b>    |

# Cash Flow

| <i>\$ in thousands</i>                      | <i>2017 Budget</i> | <i>2016 Forecast</i> | <i>2016 Budget</i> |
|---|--------------------|----------------------|--------------------|
| Revenue                                     | \$ 7,599           | \$ 7,318             | \$ 7,327           |
| Operating Expenses                          | \$ (6,630)         | \$ (6,628)           | \$ (6,302)         |
| Other Expenses (not including depreciation) | \$ (1,666)         | \$ (1,546)           | \$ (1,475)         |
| Depreciation & Amortization                 | \$ 1,338           | \$ 1,225             | \$ 1,135           |
| Bond P&I Payments                           | \$ (635)           | \$ (635)             | \$ (635)           |
| Bond Proceeds                               | \$ 514             | \$ 1,642             | \$ 910             |
| Capital Projects                            | \$ (514)           | \$ (1,642)           | \$ (960)           |
| <b>Net Cash Flow</b>                        | <b>\$ 6</b>        | <b>\$ (266)</b>      | <b>\$ -</b>        |

# Cash Reserves

| SOURCE                                 | \$ thousands |
|--|--------------|
| State NextGen Biomass Grant            | \$ 129       |
| McKnight & Northland Foundation Grants | \$ 24        |
| <b>TOTAL</b>                           | \$ 153       |

# Rates

|  | <b>2016 - 2017<br/>Increase</b> | <b>Percent of<br/>total Charge</b> | <b>Net<br/>2016-2017<br/>Increase</b> |
|--|---------------------------------|------------------------------------|---------------------------------------|
| <b>Steam</b>                             |                                 |                                    |                                       |
| Consumption Rate                         | 1.79%                           | 43.10%                             | 0.77%                                 |
| Capacity Rate                            | 6.23%                           | 56.90%                             | 3.54%                                 |
| <b>Total Steam Rate Increase</b>         |                                 |                                    | <b>4.3%</b>                           |
| <b>Hot Water</b>                         |                                 |                                    |                                       |
| Consumption Rate                         | 10.9%                           | 100%                               | 10.90%                                |
| <b>Total Hot Water Rate Increase</b>     |                                 |                                    | <b>10.90%</b>                         |
| <b>Chilled Water</b>                     |                                 |                                    |                                       |
| Consumption Rate                         | 0.0%                            | 37%                                | 0.0%                                  |
| Capacity Rate                            | 0.0%                            | 63%                                | 0.0%                                  |
| <b>Total Chilled Water Rate Increase</b> |                                 |                                    | <b>0.0%</b>                           |

# 2016 Successes



**DULUTH ENERGY**  
SYSTEMS



# Safety



# Safety, Reliability and Resilience

## Boiler natural gas system retrofits



# Resilience

## Emergency Power

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# Standardized Work

(The 4<sup>th</sup> “S” of the “Five S”s)

DULUTH ENERGY SYSTEMS | Operations Manual  
**Breaching, Smokestack, Baghouse, and Ash Systems**



## 6.3 Ash Handling System

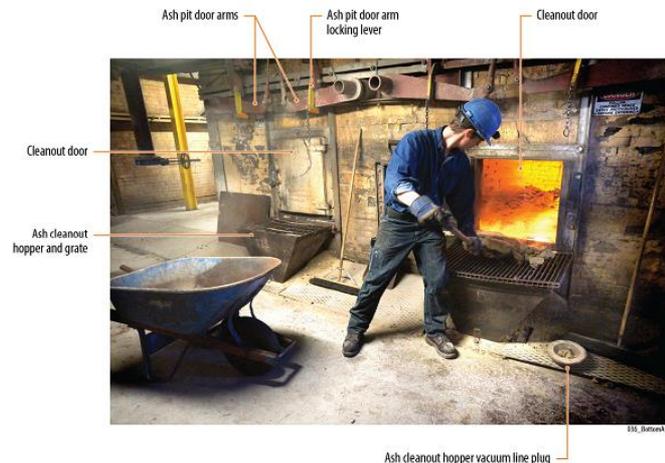
The ash handling system collects and transports coal ash from the boilers and baghouse to a storage silo for later truck loading and disposal. The ash system includes hoppers, a vacuum conveyance system, an ash storage silo (tank), and unloading equipment.

### 6.3.1 Ash Handling System Description and Specifications

After coal combustion, 7–9% of total coal burned remains as ash that must be handled in the plant and unloaded to trucks for proper disposal. The following sections describe the major components of the ash handling system.

#### Bottom Ash Hoppers (Ash Pit)

Material that settles into the bottom ash area of the boiler includes granular coal and ash particles, boiler slag, and non-combustible materials in the coal supply (rocks, clinkers, etc.). The bottom ash hopper is a collection point for this material. The bottom ash hopper is accessible through two cleanout doors on the Ground Floor on the back side of each boiler. The bottom ash is cleaned out (pulled) manually and transported through the vacuum system or by hand in wheel barrows for later disposal.



## Air Dryer Replace Prefilter, Afterfilter, Muffler & Clean Pilot Air Filter PLANT-004-A

Accomplish once every 12 months.

Improper bypass / isolation of air dryer will cause a Loss of Control Air Casualty. Inform Operator before bypassing and isolating dryer.

#### Required Materials:

1. Replacement Filter Kits (Atlas Copco Part Numbers):
  - PD130+ Filter Kit 1-2901-2004-05
  - DD120 Filter Kit 1-2901-0535-00
  - Muffler 213-1376-21
  - Pilot Air Filter (213-1376-19)
2. Teflon Tape
3. Pipe dope

#### Safety:

1. Air dryer must be bypassed and locked out before performing this maintenance.
2. Review SDS for pipe dope and ensure pipe dope container is marked with correct SDS number. Notify Supervisor if SDS is not on file, and wait until SDS has been obtained before beginning maintenance.

#### Procedure:

*Note: Use pipe dope and teflon tape to seal all reassembled pipe fittings.*

1. Bypass dryer and lock out air, steam and electric power supplies.
2. Remove pilot air filter and clean with compressed air. Replace filter if it can not be cleaned with air.
3. Remove Prefilter and replace.
4. Remove Afterfilter and replace.
5. Remove muffler and replace.
6. Clear lockout, re-align air dryer and inspect for leaks.

#### Comments:

Date Accomplished:

Accomplished By:

# Performance Measure Update

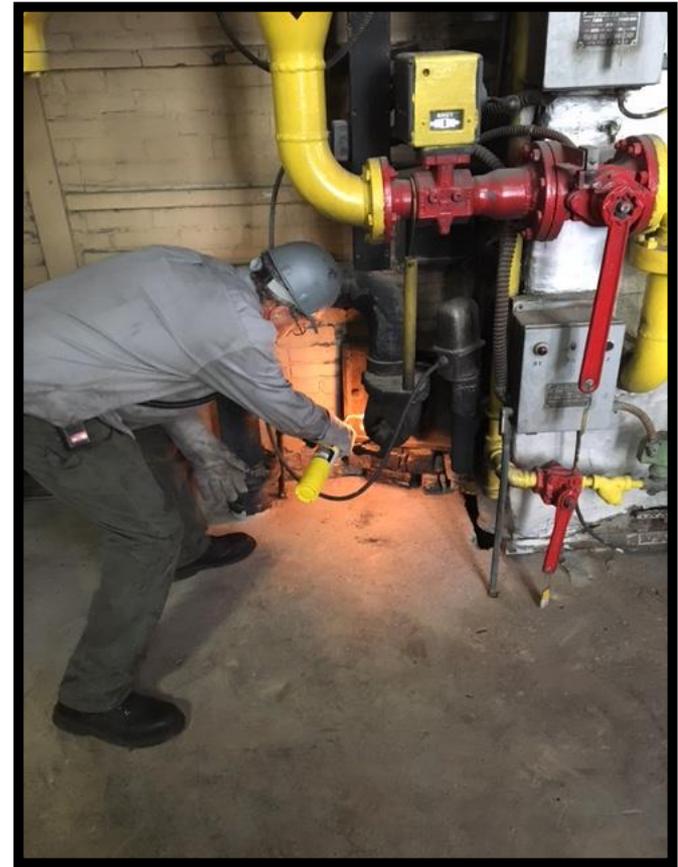
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# Safety

Approaching 1-year without a lost-time injury

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# Long-Term Service Agreements

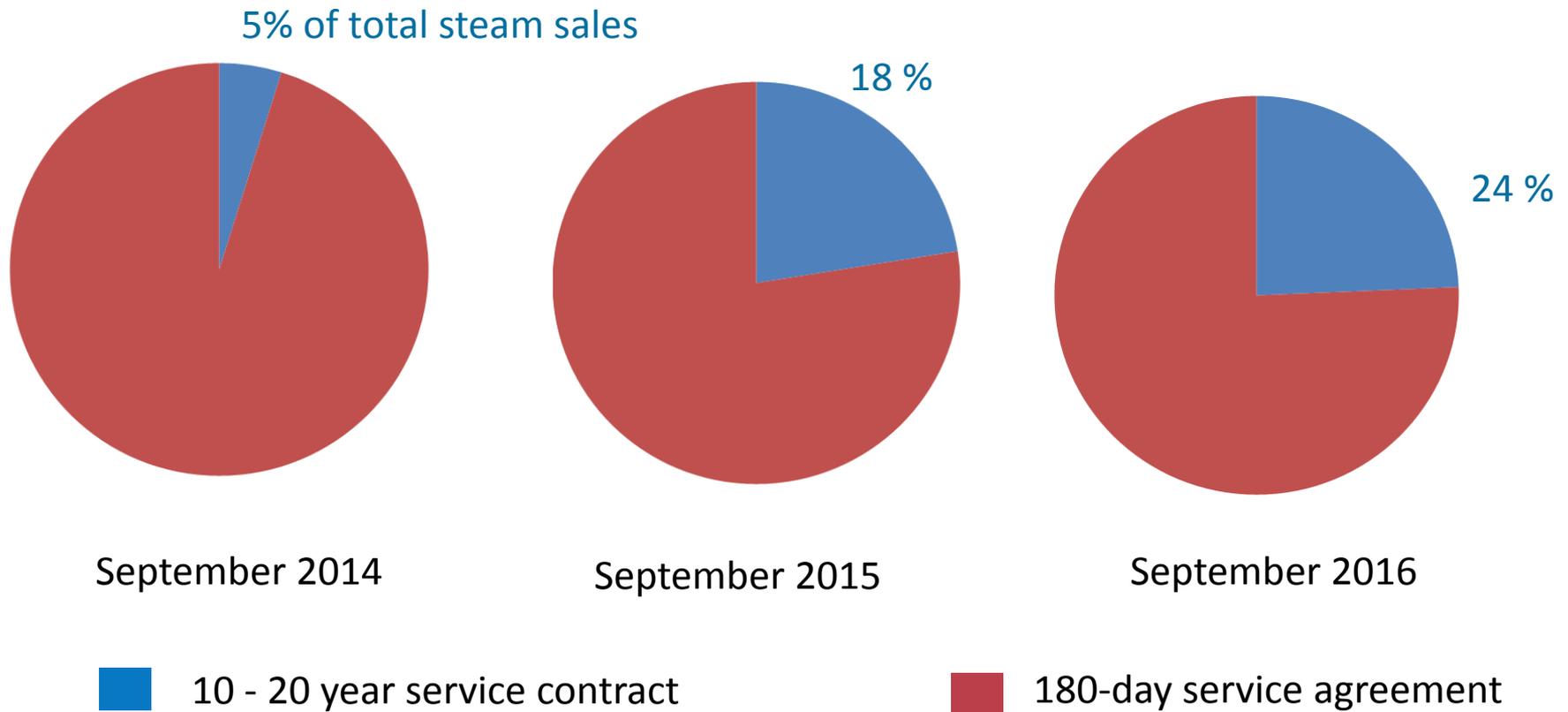
New long-term customers

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# Long-Term Steam Service Agreements

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# Superior Street Hot Water Retrofit

Working towards a ~~2017~~ 2018 construction start

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- Assist City with legislative and Summit Ave persuasion
- Customer outreach and education
- Complete off-Superior St design
- Continue to seek out other funding sources



# Displace 25% of coal with biomass

Select the best solution and market to “investors”

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- Recent RFP netted 8 proposals suggesting 4 unique solutions



# 2017 Capital Projects

Continuing to work through the deferred maintenance backlog

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|   |         |
|---|---------|
| • Install Boiler Safety Valve Escape Piping       | \$50 K  |
| • Replace ID Fan Turbine                          | \$120 K |
| • Steam Vault repairs                             | \$60 K  |
| • Distribution System valve and trap replacements | \$114 K |
| • Asbestos abatement and encapsulation            | \$75 K  |
|   | <hr/>   |
|   | \$514 K |



# Questions?

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